MAMMORX

Breast Treatment System

BREAST SETUP CALCULATOR

REFERENCE MANUAL

The MammoRx® Breast Treatment System is intended for use only by physicians qualified in radiation oncology and experienced in breast cancer treatment, or by technologists at the specific direction of such a qualified physician. It is the sole responsibility of the physician to judge whether the use of the MammoRx Breast Treatment System is clinically appropriate, whether the initial treatment plan is adequate to achieve his or her clinical goals, and whether the daily treatments are administered as prescribed.

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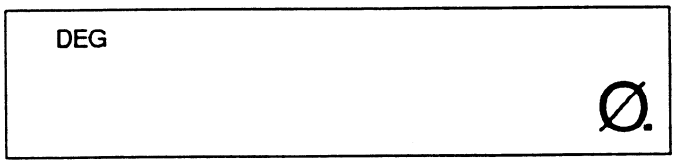
The MammoRx Breast Setup Calculator is a Sharp Model PC-1270 Pocket Computer with an EPROM that contains the MammoRx Breast Simulation and Treatment program. These instructions are provided to clarify the steps of the program and to ensure the successful application of the calculator as part of the MammoRx Breast Treatment System.

New batteries have been installed in the calculator. The calculator has been tested and should be immediately available for use. If you cannot obtain the results as expected in the step-by-step instructions given here, please refer to the Sharp PC-1270 Instruction Manual supplied with the system and follow the troubleshooting procedures outlined in that manual.

1. Turn the POWER switch to the ON position. The display screen reads:



2. Push the button labeled SET-UP, which is located above the MammoRx logo on the calculator. The display screen reads:

This message tells you that the ENTER button must be pushed to continue in the program.

3. Push the ENTER button and the display screen reads:

This message indicates the starting point for data entry into the calculator. Press the ENTER button to continue.

4. The program asks:

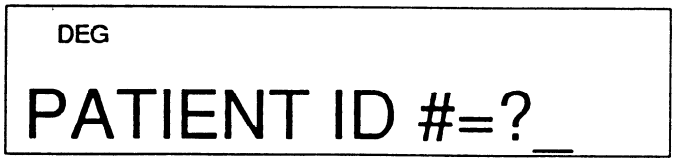
Input the gantry angle displayed on the simulator when the gantry is directly over the patient. Only two answers are accepted by the program, 0 or 180, as these correspond to the IEC or Varian conventions. The program proceeds when one of these two numbers is entered and the ENTER button is pushed.

5. The program now asks:

There are two options at this point of the program. The results of the calculations can either be printed on a small thermal paper printer included with the system or they can be displayed on the calculator. If you plan to print the results, first make sure the calculator is properly seated in the printer and then turn the POWER switch of the printer to ON. Refer to the Sharp Model CE-123P Printer Operation Manual for detailed instructions concerning the printer. Finally, press the YES button on the calculator. If you only want to display the results on the calculator screen and enter them by hand on a suitable worksheet, press the NO button on the calculator. Both paths are illustrated below.

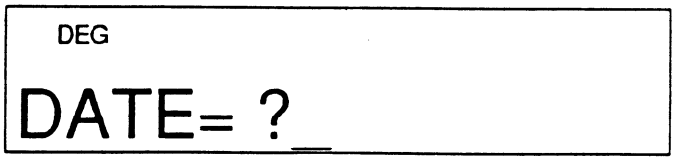
If you are printing, press the YES button and go to step 6.
If you are not printing, press the NO button and go to step 8.

6. The program asks:



A number up to seven digits long may be assigned for the patient and is entered by pressing the corresponding numeric keys on the calculator. After the number has been entered, move to the next step by pressing the ENTER button.

7. The program asks:



Up to seven digits may be entered for the date. A suggested format is month/day/year without separators, e.g. 102991 or 030991 for October 29, 1991 or March 9, 1991. After entering the data by pressing the numeric keys on the calculator, press the ENTER button.

8. The program asks:

This is the distance (cm) between the medial and lateral beam boarders and is measured with the MammoRx Caliper with Inclinometer. The distance is easily read from either side of the caliper. The slide may be locked by tightening the screw on the top of the slide while the measurement is being made. This measurement must be made with the caliper essentially plumb or vertical to avoid errors. A bubble level is provided on the caliper to help determine whether you are plumb. Enter the distance in the calculator and then press the ENTER button.

9. The program asks:

The collimator field width (cm) is determined by estimating the width necessary to cover the breast with a 1-2 cm margin beyond the nipple. Markings on the two arms of the caliper help estimate this width. Enter the field width in the calculator and then press the ENTER button.

10. The program asks:

This is the angle (degrees) between the medial and lateral beam boarders and is measured with the MammoRx Caliper with Inclinometer. Before you make this measurement, make sure the inclinometer has been turned on by pressing the ON/OFF button. The angle is easily read from the inclinometer and is locked in the meter by pressing and releasing the HOLD button when the measurement is correct. Pressing a second time on the HOLD button releases the lock. This measurement must be made with the caliper essentially plumb or vertical to avoid errors. A bubble level is provided on the caliper to help determine whether you are plumb. Enter the measured angle

into the calculator. The angle is used in the calculations and printed to the paper tape. However, the calculator display screen limits the CALIPER ANGLE= output to two significant digits. Turn the inclinometer off by pressing the ON/OFF button to conserve the battery in the meter. For instructions on the operation and periodic level reset of the digital inclinometer, refer to the Wedge Innovations SMARTLEVEL® Instruction Manual included with the MammoRx system.

11. The program asks:

This number is the target-axis-distance (TAD) of your isocentric simulation and treatment equipment. Input either 100 or 80 (cm), as applicable to your machine, into the calculator and then press the ENTER button. The calculator will only accept the current 80 or 100 cm industry standard values.

12. The program asks:

Press either the YES or NO button on the calculator depending on the side of the patient being treated.

If you are printing, go to step 13a
If you are not printing, go to step 13b

13a. The printer starts printing and outputs the following:

PT. ID:	(Patient ID number entered)
DATE:	(Date entered)
SEPARATION =	(Measured value entered)
FIELD WIDTH =	(Value entered determined by breast size)
CALIPER ANGLE =	(Measured value entered)
MACHINE TAD =	(Value entered determined by treatment machine)
VERTICAL SIM =	(Simulator overhead gantry angle)

RIGHT (OR LEFT) BREAST TX (Message indicates which breast is being treated)

TSD = (Calculated TSD)
SHIFT = (Calculated shift of isocenter in cm)
MED SIM ANG = (Calculated medial simulation angle)
LAT SIM ANG = (Calculated lateral simulation angle)

Note: If the printer does not start printing, it may not be turned on or connected to the calculator, it may not be connected to AC power through the adapter or the batteries may be dead. The calculator display screen will be blank. Press the ENTER button to display the printer output on the calculator display screen.

13b. The calculator displays the following output:

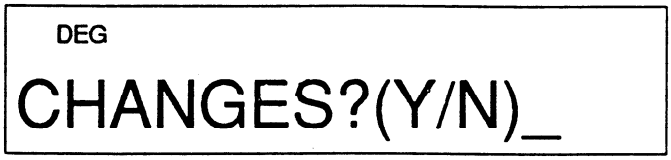
After recording each parameter, press ENTER to move from one output to the next.

SEPARATION = (Measured value entered)
FIELD WIDTH = (Value entered determined by breast size)
CALIPER ANGLE = (Measured value entered)
MACHINE TAD = (Value entered determined by treatment machine)
VERTICAL SIM = (Simulator overhead gantry angle)

RIGHT (OR LEFT) BREAST TX (Message indicates which breast is being treated)

TSD = (Calculated TSD)
SHIFT = (Calculated shift of isocenter in cm)
MED SIM ANG = (Calculated medial simulation angle)
LAT SIM ANG = (Calculated lateral simulation angle)

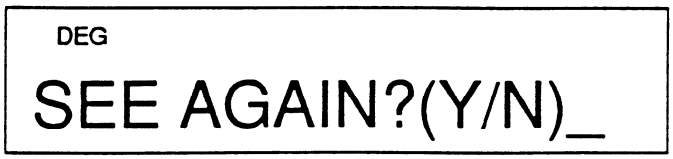
14. The program then asks:



Press the YES button if you have changes to make and return to step 4 or press the NO button to continue.

If you are printing, the printer will output the new results.
If you are not printing, the calculator will display the new results.

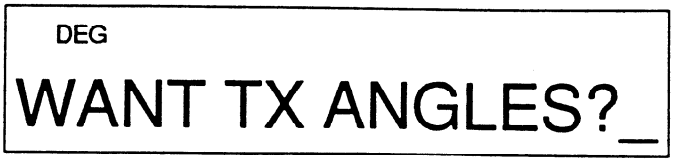
15. The program then asks:



If you are printing, press the YES button and the printer reprints which breast is being treated and the information calculated. The program returns you to step 14.
If you are not printing, press the YES button and the calculator displays which breast is being treated and the information calculated. The program returns you to step 14.

Press the NO button and the program continues.

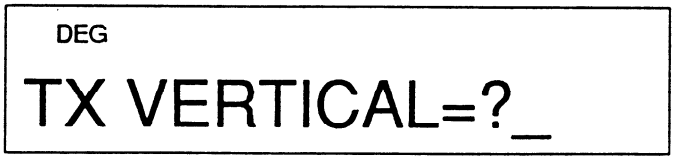
16. The program asks:



If you are printing, press the NO button and the program ends with the printed message "SETUP RESTARTS".
If you are not printing, press the NO button and the program ends with the message "SETUP RESTARTS" displayed on the calculator screen

Press the YES button and the program continues and calculates the treatment angles based on the gantry angle convention of the accelerator, which may be different from the simulator.

17. The program asks:



Enter the IEC or Varian convention of your treatment machine. The program accepts only 0 or 180 as possible choices. Press the ENTER button to continue.

If you are printing, go to step 18a
If you are not printing, go to step 18b

18a. The printer output prints the treatment machine gantry angle entered and the medial and lateral treatment angles.

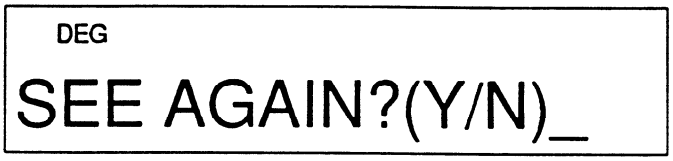
TX VERTICAL =	(Treatment machine overhead gantry angle)
MED TX ANG =	(Computed medial treatment angle)
LAT TX ANG =	(Computed lateral treatment angle)

18b. The calculator displays the treatment machine gantry angle entered and the medial and lateral treatment angles.

After recording each parameter, press ENTER to move from one output to the next.

TX VERTTCAL =	(Treatment machine overhead gantry angle)
MED TX ANG =	(Computed medial treatment angle)
LAT TX ANG =	(Computed lateral treatment angle)

19. The program asks:



If you are printing, press the YES button to print the two treatment angles.
If you are not printing, press the YES button to display the two treatment angles on the calculator screen.

Press the NO button to end the program. The program will continue to ask if you want to see the results again until you again press the NO button. SETUP RESTARTS is displayed on the calculator screen to denote the end of the program.

You should now turn the POWER switch on both the printer and the calculator to the OFF position. The calculator will automatically turn off after a short time but the printer will not turn off automatically and will quickly drain the battery if it is being operated with batteries instead of a power adapter.

Use information and calculations from prior patients to help you become familiar with the program and verify that the calculator is providing the same answers as you have previously calculated. Practice recording or taping the calculator output to the patient's simulation work sheet.